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A 'HUMAN NEEDS' DIET IN SPRING 1950

(1) THE MEANING OF A 'HUMAN NEEDS' DIET

In the second half of April 1950, surveys of the cost of a ' human needs ' diet were again carried out in London, Oxford, and Reading. Shops and markets in working-class districts were visited and prices collected. We then calculated the weekly cost of a dietary for a family of 5 persons by means of the price lists compiled for the various districts, and we made sure that it would have been possible to purchase the diet in any of the districts visited at the total outlay computed by us. It is necessary to stress this point in view of the fact that for individual foods, sometimes quite considerable differences in price occurred in different districts and even in the same district in different shops. Our final selection of prices, therefore, by no means always represents minimum prices, but rather indicates the charges made for the several items of food by the majority of clean and inexpensive shops and market stalls, some, in fact, asking a little more for one food and a little less for another than appears from our schedule.

Every time we undertake our survey we have to face anew the question of what foods constitute a 'human needs' diet. Mr. Rowntree's diet schedule for 1936,[1] which, so to speak, represents the starting point of this series of surveys, had to be modified continuously so as to adjust it to conditions of rationing and changes in the general supply of foods. Gradually markets are reverting to more normal aspects. Yet after a period of enforced and often very considerable deviations from accustomed diets one has to ask oneself whether one would be justified in assuming that the 'human needs' diet of 1936 is still representative in 1950. Can a diet which whould have been considered to satisfy ' human needs ' from a physiological as well as from a culinary view point 14 years ago be claimed to do this to-day; and if not, to what extent must one allow on this count for alterations in the structure of a diet schedule within the confines of 'human needs.'

In general it can be said of Mr. Rowntree's dietary of 1936 that it has stood the test of time well. In fact, if the complete diet as set out by him could be bought to-day by a housewife of small means, many a family would enjoy a greater variety in their menus and would therefore gladly adopt it, even though it provides for a smaller intake of milk—and that only skimmed condensed milk—than is considered necessary nowadays for a family with 3 children. But there can be no doubt that the incidence of food rationing over a long period and the concomitant popularization of nutritional research have been and still are operative in modifying people's feeding habits, to an extent too great to be disregarded in any realistic assessment of the minimum cost of adequate nutrition. The generally accepted need for a higher consumption of milk than was customary or, even, deemed necessary in poor families in the 'thirties, is probably the most striking example. Further, the fixing of individual rations carries with it the suggestion that these rations are supplied in recognition of basic needs. Hence it is reasonable to include in the schedule of a ' human needs ' diet the full rations of most foods, even if in part they could be replaced by other and less expensive ones. This has usually been recognized in our schedules, with two main exceptions : first, we always substituted margarine for butter, and, secondly, we only allowed for the weekly purchase of ½ lb. of tea for a family of 5 persons, although for a family of this size the full ration varied between 10 oz. and 12½ oz. In both these points our schedule conforms to that drawn up by Mr. Rowntree. Also, we sometimes assumed that not all of the available food ' points ' would be utilized, and on two occasions we excluded a small part of the fat ration after it had been raised to over ½ lb. per head per week.

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[1] B. Seebohm Rowntree, *The Human Needs of Labour*, London, 1937 (New Ed.)

The assumption that less than the full ration of a cheap fat food like margarine is bought by a poor housewife seems, however, only permissible in the short run, that is for so long as changes in the ration may not have been fully assimilated into the family diet. In the schedule which we compiled this April, allowance has been made for the purchase of the full ration of margarine and also for the utilization of all the food ' points '.

(2) A Weekly Diet for 5 Persons

The complete weekly dietary for a family of 5 persons—husband, wife, 2 children aged between 7 and 12 years, and one child aged 5 years—is shown in Table I. The first two columns of figures give the quantities and the prices per unit, and, in *italics*, the total cost of the foods in each of the five groups. The last two columns show in what way the schedule for April 1950, differs from that for November 1949, with respect to quantities and to cost. Increases occurred since November in the rations of meat, bacon, and fats, and there was also a special issue of sugar in April, amounting to 4 oz. per head per week. On account of the raised total expenditure on meat we assumed that only about 3 lb. of it was bought for roasting, and the remaining outlay expended on 2 lb. of meat for stewing. A reasonably economical cut of the former could be obtained at about 1s. 7d. a lb., while for the latter we took as an average cost 1s. 4d. per lb. No expensive meat for roasting was included in Mr. Rowntree's dietary, in which stuffed breast of mutton took the place of the Sunday 'joint'; but the years of scarcity and lack of variety of meat have made the purchase of a proper Sunday ' joint ' for most housewives a luxury that is virtually a necessity if their families are to enjoy their Sunday dinner.

The weekly number of food ' points ' at the housewife's disposal would

TABLE I. *Weekly 'Human Needs' Diet for a Family of 5 Persons*

	Quantity	Price[1] per Unit s. d.	Changes since November1949 Quantity	*Cost* *s. d.*
(*a*) Rationed Foods :				
1 Meat	5 lb	1 6	+ 12 oz.	+ *10*
2 Bacon	1 lb 4 oz.	2 0	+ 5 oz.	+ *7½*
3 Margarine	2 lb 13 oz.	10	+ 10 oz.	+ *6¼*
4 Cooking Fat	10 oz.	1 0	...	...
5 Sugar	3 lb 12 oz.	5	+1 lb 4 oz.	+ *6¼*
6 Syrup	...	...	—1 lb	— *9½*
7 Tea	8 oz.	3 6	...	...
8 Cheese	10 oz.	10	...	...
9 Eggs, shell	5 eggs	3	...	— *2½*
10 Cond. Milk, skmd.	...	...	— 2 tins	— *1 6*
11 Rice	1 lb 8 oz.	9	...	...
12 Dried Fruit[2]	8 oz.	10	— 8 oz.	— *7*
Outlay on Group (*a*)		*19 9¾*		— *7*
(*b*) Fresh Milk :				
13a Ordinary	18½ pt.	5	+ 3½ pt.	+ *1 5½*
13b School	5 pt.	free	...	...
Outlay on Group (*b*) ...		*7 8½*		+ *1 5½*
(*c*) Main Carbohydrate Foods :				
14 Bread	18 lb 4 oz.	5½	—3 lb 10 oz.	— *11*
15 Flour	2 lb	4	...	...
16 Potatoes	21 lb	11½	...	— *2¼*
Outlay on Group (*c*)		*8 4¼*		— *1 1¼*
(*d*) Fresh Vegetables :				
17a Carrots	...	...	—3 lb 8 oz.	— *6¼*
17b Swedes	3 lb 8 oz.	4	.+1 lb	+ *6½*
17c Greens[3]	1 lb 8 oz.	1 0	—5 lb 8 oz.	— *10*
17d Onions	8 oz.	9	— 8 oz.	— *0½*
17e Beetroot	2 lb 8 oz.	4	+2 lb 8 oz.	+ *10*
Outlayon Group (*d*) ...		*3 10½*		— *0¼*
(*e*) Other Foods :				
18a Peas, dried	8 oz.	10	...	— *0¼*
18b Beans, dried	8 oz.	10	...	— *0½*
18c Lentils, dried	8 oz.	9	+ 8 oz.	+ *4½*
19 Rolled Oats	2 lb 8 oz.	7	...	...
20 Macaroni	4 oz.	10	...	...
21 Jam (Plum)	6 oz.	1 2	...	...
22 Cocoa	4 oz.	1 3½	...	...
23 Condiments	...	1 0	...	...
24a Herrings	...	...	—2 lb 8 oz.	— *1 4¼*
24b Kippers	2 lb 8 oz.	1 0	+ 1 oz.	+ *3*
25a Pork Sausages	...	...	— 7 oz.	— *8*
25b Beef Sausage Meat	2 lb 8 oz.	1 1	+2 lb 8 oz.	+ *2 8½*
26 Oranges	2 lb	8	+2lb	+ *1 4*
Outlay on Group (*e*) ...		*11 6*		+ *2 7*
Total Outlay ...		**51 3**		+ **2 4**

[1] The price unit is : eggs, one egg ; fresh milk, pint ; bread, 1¾ lb loaf ; potatoes, ¼ stone ; cocoa, ¼ lb ; condiments, total outlay ; all other foods, lb.

[2] Prunes in November, 1949, currants in April/May, 1950.

[3] Cabbage in November, 1949, spinach in April/May, 1950.

have been 30 in November 1949, and 20 in April 1950.[1] These 20 'points' were required for the purchase of 1½ lb. of rice, taking up 12 'points', and ½ lb. of currants. Condensed milk was rationed on 'points' in November, but was unrationed in April. Fresh milk, however, was plentiful in the spring of this year, and frequent advertisements published by the Ministry of Food, admonished people to use more of it. It would therefore have been natural for a housewife to replace the 2 tins of condensed milk, included in the dietary for November, by fresh milk, and we assumed this to have happened. The larger quantity of fat in the April dietary is counterbalanced by a reduction in the quantity of bread, accompanied by an increase in the quantity of pulses—in the form of ½ lb. of lentils—which as compared with their calorific value, are exceptionally good sources of protein; this also is provided by bread but not by fats. An increase in the quantity of pulses seemed moreover justified for culinary reasons, since to some extent they represent a substitute for fresh vegetables, which in April were dear and scarce, and of which in accordance with the general practice under such circumstances, we assumed a very much reduced consumption.

The better supply of meat in April made it possible for a housewife to purchase without difficulty substantial quantities of sausage meat, and we included 2½ lb. of beef sausage meat in our dietary. Fresh herrings cost about 8d. a lb. but they were scarce, the main reason being that towards the end of April there was a steep drop in the prices of other fish, which greatly reduced the demand for fresh herrings. Kippered herrings could be bought freely, and only this fish is included in our schedule. The price of oranges—decontrolled in May, when it rose to 1s. 4d.—was 8d. a lb. in April, and we assumed that the family purchased 2 lb. of them in order to partly compensate the decline of vitamin C in the diet, on account of the smaller allowance of fresh vegetables. In May, when oranges became much dearer, the price of fresh vegetables went down, and at least the same amount of vitamin C as from the diet for April could then have been obtained by employing the 2s. 10d., allotted to the purchase of oranges and spinach, for the purchase of spring greens and spinach only.

The total cost of the diet amounted to 51s. 3d., which was 2s. 4d. more than the cost of an equivalent diet in November 1949. This difference could have been reduced by about 6d. through replacing the English plum jam by imported jam, at 1s. 2d. for 1½ lb., and the 1½ lb. of rice, at 9d. a lb., by 1½ lb. of semolina at 6d. a lb. Semolina and imported jam were available at these prices in certain shops in all the districts visited, and both foods were of excellent quality; but it was not always easy to discover them, and we therefore did not consider it justified to reduce the figure of total cost on this account.

The purchase of the family's sweets ration of 5 oz. per head per week, bought in equal parts in the form of chocolate and of boiled sweets, would have required an outlay of about 4s. 2d. On account of the calorific intake from these foods the consumption of sugar, margarine, or bread, might have been curtailed, 25 oz. of chocolate and boiled sweets providing approximately as many calories as 1¾ lb. of sugar, 14 oz. of margarine, or 2¾ lb. of bread. Margarine, however, is a valuable source of vitamin A, and bread a good source of protein, minerals, and vitamin B, which makes both these foods more essential items of a diet than either sugar or boiled sweets.

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[1] 'Points' rationing was abolished as from May 20th, 1950.

(3) THE CULINARY ASPECT OF THE DIET

From the view point of the average housewife the first-class protein foods are probably the most important ones, and they certainly tend to absorb a very substantial share in her total expenditure on food. In Table II we indicate in outline how the quantities of these and of the fat foods in our dietary compare with those in Mr. Rowntree's dietary for 1936. It will be seen that while the consumption of meat and bacon envisaged by us falls short of that suggested by Mr. Rowntree, by ¾ lb. per week, our allowances of eggs and of milk and cheese (both these expressed in terms of fresh milk) are considerably in excess of his. The meat included in Mr. Rowntree's dietary consisted of a variety of meats—including liver—amongst which a housewife of small means could choose fairly freely; he further assumed the purchase of one pound of cheese, while the ration in April 1950 only gave 10 oz. per week to a family of 5 persons. Hence the dietary for 1936 made it somewhat easier for a cook of average ability to ring the changes with tasty meals than does the dietary for April 1950.

TABLE II

First Class Protein and Fat Foods in Weekly 'Human Needs' Diet for 5 Persons

		1936		Spring 1950	
1 & 25b[1]	All Meat	8 lb		7 lb	8 oz.
2	Bacon	1 lb	8 oz.	1 lb	4 oz.
24b	Fish	2 lb	8 oz.	2 lb	8 oz.
9	Eggs	1 egg		5 eggs	
8 & 13	Cheese and Milk (*in terms of fresh milk*) ...	19¼ pt.[2]		26¾ pt.[2]	
3 & 4	Fats	2 lb	12 oz.	3 lb	7 oz.

[1] The serial numbers refer to the foods in Table I; these foods are not identical with those in Mr. Rowntree's diet for 1936.

[2] Approximately.

The relatively smaller quantity of fat in Mr. Rowntree's diet was counterbalanced by a more generous allowance of sweet foods, consisting of 1 lb. of treacle, 1 lb. of jam, 2 lb. of sugar bought as such and about 3 lb. of sugar contained in skimmed condensed milk.

Table III shows a subdivision of the total diet into individual shares. We have assumed that most—if not all—of the meals are partaken of by all the members of the family, and that the husband obtains the largest portion of the tasty foods, while the youngest child consumes more milk than any other member of the family. Of the fresh vegetables, most of the swedes are allotted to the husband and most of the spinach to the children, to whom

TABLE III

Individual Weekly Shares Available in 'Human Needs' Diet for 5 Persons

	Husband	Wife	Child 7—12 years[1]	Child 5 years
(*a*) Rationed Foods :				
1[2] Meat	1 lb 8 oz.	14 oz.	15 oz.	12 oz.
2 Bacon	8 oz.	3 oz.	3½ oz.	2 oz.
3 Margarine	1 lb	12 oz.	6½ oz.	4 oz.
4 Cooking Fat	3 oz.	2 oz.	2 oz.	1 oz.
5 Sugar	6 oz.	1 lb	13 oz.	12 oz.
7 Tea	2½ oz.	3 oz.	1 oz.	½ oz.
8 Cheese	5 oz.	2 oz.	1 oz.	1 oz.
9 Eggs	1½ eggs	1 egg	1 egg	½ egg
11 Rice	7 oz.	6 oz.	4 oz.	3 oz.
12 Dried Fruit	2 oz.	2 oz.	1½ oz.	1 oz.
(*b*) Fresh Milk :				
13a Ordinary	2 pt.	3½ pt.	3½ pt.	5 pt.
13b School	—	—	1⅔ pt.	1⅔ pt.
(*c*) Main Carbohydrate Foods :				
14 Bread	5 lb 5 oz.	4 lb 10 oz.	3 lb 4½ oz.	1 lb 12 oz.
15 Flour	12 oz.	6 oz.	6 oz.	2 oz.
16 Potatoes	7 lb	4 lb	3 lb 12 oz.	2 lb 8 oz.
(*d*) Fresh Vegetables :				
17b Swedes	1 lb 4 oz.	14 oz.	8 oz.	6 oz.
17c Greens	3 oz.	3 oz.	6 oz.	6 oz.
17d Onions	3 oz.	2 oz.	1 oz.	1 oz.
17e Beetroot	8 oz.	8 oz.	8 oz.	8 oz.
(*e*) Other Foods :				
18 Pulses	8 oz.	5 oz.	4 oz.	3 oz.
19 Rolled Oats	8 oz.	8 oz.	9 oz.	6 oz.
20 Macaroni	—	1 oz.	1 oz.	1 oz.
21 Jam	1 oz.	1 oz.	1½ oz.	1 oz.
22 Cocoa	—	1 oz.	1 oz.	1 oz.
24b Kippers	12 oz.	12 oz.	6 oz.	4 oz.
25b Beef Sausage Meat	12 oz.	8 oz.	8 oz.	4 oz.
26 Oranges	—	5 oz.	9 oz.	9 oz.

[1] Two children in this age group.
[2] The serial numbers correspond to those in Table I.

also go by far the greatest part of the oranges. In all, the picture as drawn in Table III is probably a fairly realistic one, and a number of the foods are clearly interchangeable without any serious disturbance in the nutritional balance. How much, *e.g.*, the husband on the one hand and the children on the other will eat of rice or macaroni may depend on whether these foods are served in the form of tasty dishes or of milk puddings; the preference for the one type of food or for the other is also likely to determine the relative consumption by the several members of the family of fats and of sugar.

(4) THE NUTRITIONAL ASPECT OF THE DIET

The nutritional intake available from the individual shares is shown in Table IV, for calories and the main nutrients. The upper part of Table IV sets out the nutritional requirements as recommended by the Ministry of Health; these, however—as we have pointed out on previous occasions—suggest an intake of calcium higher than is customary for most children, depending, as it does, essentially on their consumption of two foods, *viz.*, milk and cheese.

TABLE IV

Nutritional Requirements and Intake from 'Human Needs' Diet

Nutritional Requirements per Day:

	Husband	Wife	Child 7-12 years[2]	Child 5 years	M.A.E.[1] of Family of 5 Persons
Calories	3000	2500	2100	1500	3.73
Protein, gm.	70	60	65	50	4.43
Calcium, gm.	0.8	0.8	1.4	1.3	7.13
Iron mgm.	10	10	13	8	5.40
Vitamin A, Intern. Units ...	3000	3000	3000	3000	5.00
Vitamin B_1, mgm.	0.90	0.75	0.95	0.68	4.68
Vitamin C, mgm....	30	30	30	30	5.00

Individual Intake per Day from 'Human Needs Diet' (Table III):

	Husband	Wife	Child 7-12 years[2]	Child 5 years	Av. Intake per M.A.E.[1]
Calories	3100	2560	2170	1550	3100
Protein, gm.	96	75	70	52	82
Calcium, gm.	0.8	0.8	0.9	0.8	0.6
Iron, mgm.	19	15	13	9	13
Vitamin A, Intern. Units ...	2450	2030	2180	2000	2200
Vitamin B_1, mgm.	2.0	1.5	1.4	1.0	1.6
Vitamin C, mgm....	25	29	38	36	33
Animal Protein, gm.	39½	30½	33	30	37½
of total protein requirements ...	*56.4%*	*51.7%*	*50.8%*	*60%*	*54%*

[1] Male Adult Equivalent. [2] Two children in this age group.

The shortage of fresh vegetables and, in particular, the absence of carrots from the dietary, would result in an intake of vitamin A about 25 per cent below the optimum, a shortcoming which could be corrected when vegetables are again more plentiful, since the human body is capable of storing considerable amounts of the vitamin. This also applies to some extent to the less stable vitamin C, the intake of which from the diet would have been quite sufficient on the average, though possibly not for each individual member of the family. The seasonal decline in the vitamin C content of potatoes would affect most the husband's intake of this vitamin, if—as we have assumed—he eats large quantities of potatoes but no oranges.

All our calculations of nutritional intake are based on the data set out in the *War Memorandum No.* 14, published by the Medical Research Council. The proportions of wastage allowed by us for the different kinds of vegetables are: potatoes, 25 per cent; spinach and onions, 5 per cent; beetroot and swedes, 35 per cent. We further assumed that 50 per cent of the available content of vitamin C—as given in the *Memorandum*—would be lost in the process of cooking. Three International Units of carotene have been taken to equal one International Unit of vitamin A. This is rather a conservative estimate, which is recommended in the *Memorandum*; Sherman takes the proportion as approximately 2 : 1.[1]

The content of animal protein of the individual shares as shown in Table III, is expressed as a percentage of the total individual requirements, in the bottom row of Table IV. No definite figures of individual requirements of

[1] Henry C. Sherman, *Chemistry of Food and Nutrition*. New York, 1941 (6th Ed.), p. 421.

animal protein are in general use, but it is frequently considered desirable that it should represent approximately 50 per cent of the total protein requirements. It will be seen that our percentage figures range from about 51 per cent to 60 per cent, giving for the total diet an average of 54 per cent.

The relative shares of the several foods or food groups in the diet, as regards both cost and nutritive value, are summarized in Table V. The first seven foods are those that supply animal protein. It will be seen that in terms of animal protein, bacon and eggs are the dearest foods and cheese is the cheapest one. The figures of cost and of nutritive content of milk in Table V are not strictly comparable, as are those of all the other foods, since the figure of relative cost of milk only takes account of 18½ pints while the figures of nutritive values also include the 5 pints of milk obtained free by 3 children at school.

TABLE V

Relative Cost and Nutritive Values of Foods in 'Human Needs' Diet for 5 Persons (Table I)

		Cost	Calories	Protein	Calcium	Iron	Vitamin A	Vitamin B_1	Vitamin C
1[1]	Meat, rationed	14.6	6.5	13.3	0.8	15.1	1.4	4.1	—
25b	Beef Sausage Meat	5.3	3.0	5.2	1.3	5.0	0.2	3.4	—
2	Bacon	4.9	3.2	1.7	0.2	1.3	—	4.4	—
24b	Kippers	4.9	1.8	4.9	2.8	2.5	1.6	0.2	—
9	Eggs	2.4	0.5	1.2	0.5	1.4	3.3	0.7	—
8	Cheese	1.4	1.4	2.8	8.0	0.4	4.9	0.2	—
13	Milk[2]	15.0	9.9	16.8	55.6	3.0	18.6	12.1	12.2
		48.5	26.3	45.9	69.2	28.7	30.0	25.1	12.2
3	Margarine	4.6	12.1	—	0.2	0.9	33.7	—	—
4	Cooking Fat	1.2	3.1	—	—	—	—	—	—
5	Sugar	3.1	8.0	—	—	—	—	—	—
14	Bread	9.4	25.6	27.6	16.2	30.7	—	30.7	—
15	Flour	1.3	3.9	4.2	2.5	4.7	—	5.4	—
19	Rolled Oats	2.9	5.5	5.4	2.2	10.0	—	10.1	—
11	Rice	2.2	2.9	1.7	0.1	0.5	—	1.1	—
20	Macaroni	0.4	0.5	0.5	0.1	0.3	—	0.2	—
18	Pulses	2.3	2.4	6.3	2.2	9.1	0.2	6.1	—
16	Potatoes	5.6	6.6	5.3	2.3	7.0	—	17.3	14.5
17b	Swedes	2.3	0.3	0.4	2.0	1.2	—	0.8	17.0
17c	Spinach	2.9	0.2	0.8	—	—	35.1	1.3	18.7
17d	Onions	0.7	0.1	0.1	0.2	0.2	—	0.1	1.0
17e	Beetroot	1.6	0.4	0.5	0.8	1.7	—	0.6	3.4
26	Oranges	2.6	0.3	0.2	1.0	0.7	0.9	1.0	33.2
12	Dried Currants	0.8	0.7	0.2	0.7	0.9	—	—	—
21	Jam	0.9	0.5	—	0.1	—	—	—	—
22	Cocoa	1.3	0.6	0.9	0.2	3.4	0.1	0.2	—
		46.1	73.7	54.1	30.8	71.3	70.0	74.9	87.8
	Total	100.0[3]	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] The serial numbers correspond to those in Table I.

[2] Including 5 pints of milk received free by 3 children at school.

[3] Including cost of tea (3.4 per cent) and of condiments (2 per cent).

The importance of bread as an item of diet stands out strikingly. At a cost amounting to less than 10 per cent of the diet, it would provide about

TABLE VI

Relative Expenditure on and Intake of Nutrients from Diet in Table III

	Food Group	Husband	Wife	Child 7-12 years	Child 5 years	Diet for 5 Persons
Outlay	*(a)*	47.2	39.3	35.5	31.3	38.7
	(b)	6.4	13.4	17.1	26.5	15.0
	(c)	19.9	17.3	15.4	10.7	16.3
	(d)	7.0	6.8	7.8	9.1	7.6
	(e)[1]	19.5	23.2	24.2	22.4	22.4
	Total	100.0	100.0	100.0	100.0	100.0
Calories	*(a)*	41.7	40.1	35.9	36.8	38.5
	(b)	3.1	6.6	12.7	20.9	9.9
	(c)	41.6	38.3	34.7	26.0	36.2
	(d)	0.8	0.8	0.8	1.1	0.8
	(e)	12.8	14.2	15.9	15.2	14.6
	Total	100.0	100.0	100.0	100.0	100.0
Protein	*(a)*	26.4	18.5	18.9	19.3	20.8
	(b)	5.4	12.0	21.0	32.8	16.7
	(c)	43.1	42.3	34.9	24.5	37.1
	(d)	1.4	1.6	1.9	2.4	1.8
	(e)	23.7	25.6	23.3	21.0	23.6
	Total	100.0	100.0	100.0	100.0	100.0
Calcium	*(a)*	24.8	11.6	6.1	5.4	10.6
	(b)	24.7	45.0	64.2	76.3	55.6
	(c)	33.5	27.3	18.2	9.6	21.0
	(d)	4.9	3.8	2.3	2.0	3.0
	(e)	12.1	12.3	9.2	6.7	9.8
	Total	100.0	100.0	100.0	100.0	100.0
Iron	*(a)*	22.9	17.4	19.8	22.2	20.5
	(b)	0.9	2.0	3.8	6.6	2.9
	(c)	47.0	46.0	40.5	31.9	42.4
	(d)	3.0	3.1	2.8	3.8	3.0
	(e)	26.2	31.5	33.1	35.5	31.2
	Total	100.0	100.0	100.0	100.0	100.0
Vitamin A	*(a)*	70.6	58.0	31.2	21.7	43.3
	(b)	7.1	14.8	22.3	28.4	18.6
	(d)	19.5	23.4	43.6	47.3	35.1
	(e)	2.8	3.8	2.9	2.6	3.0
	Total	100.0	100.0	100.0	100.0	100.0
Vitamin C	*(b)*	6.8	10.5	12.9	15.8	12.2
	(c)	31.5	16.0	11.4	7.9	14.5
	(d)	61.7	43.5	34.7	33.5	40.1
	(e)	—	30.0	41.0	42.8	33.2
	Total	100.0	100.0	100.0	100.0	100.0

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[1] Including outlay on condiments as shown in Table VII.

three-tenths of the total protein, iron, and vitamin B_1 of the diet, yielding over a quarter of its total calorific value. Moreover, next to milk it would be the largest single source of calcium. Spinach, margarine, and milk, would provide between them 87 per cent of the total content of the diet of vitamin A, and oranges would be the source of one third of its content of vitamin C.

(5) Family Nutrition and the Cost per Head

The importance of the different foods in the individual shares according to cost and nutritional values, is outlined in Table VI. For each share, total nutritional values as shown in Table IV, and total cost, have been equated to 100. No figures are shown for vitamin B_1, with which any diet containing fair quantities of bread, potatoes, rolled oats or oatmeal, and milk, is well supplied, the ' human needs ' diet providing approximately 1¾ times as much as required by the family.

The importance of the foods in group (*a*)—the rationed foods—and in group (*c*)—the starchy ones—in the husband's share of the diet, as compared with the shares of the other members of the family, stands out clearly. Over two-thirds of the outlay on his food would be spent on these two groups, which would provide over four-fifths of his calorific intake, nearly three-fifths of his intake of calcium, seventh-tenths of his intake of protein and of calcium, and, group (*a*) alone, also seven-tenths of his intake of vitamin A. On the other hand, only 6½ per cent of the total cost of the husband's share would be required for the purchase of milk, which in the case of the youngest child, would take up over a quarter of the total expenditure.

The cost of the individual shares as well as the average cost per person per week is shown in absolute figures in Table VII. Of particular interest are the figures of cost of the rationed foods in group (*a*), for the individual shares, which strongly reflect the very uneven distribution of the rations. As we have shown, such a distribution would by no means run counter to a reasonably well balanced nutrition, and there can be little doubt that in many poor families most of the rations of meat, bacon, cheese, and fats, go to the husband. Indeed, were the youngest child to consume his full ration of 11 oz. of fats and 5 oz. of bacon, he would derive from these foods alone approximately 30 per cent of his total calorie requirements but only 3 per cent of his necessary intake of protein, and a diet incorporating these quantities would be bound to be seriously deficient in essential nutrients.

If we equate the cost of the husband's share as given in Table VII, with 1.00, the cost of the wife's share would be 0.84, that of each of the two older children's 0.75, and that of the youngest child's 0.60, giving an average cost per person of 0.79. These figures very closely approach those usually employed by us in our surveys of household expenditure for assessing the cost of maintenance of a person within the family.[1] Obviously, the figures in Table VII are not suitable for calculating the cost of maintenance of a single

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[1] The figures used in these surveys are : Husband, 1.00 ; wife, 0.85, child 7—12 years, 0.70; child 5—6 years, 0.60.

TABLE VII

Weekly Cost of Individual Shares in 'Human Needs' Diet for 5 Persons

	Husband		Wife		Child 7-12 years[1]		Child 5 years		Average per Person	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
(*a*) Rational Foods	6	1¾	4	3½	3	5½	2	5½	3	11½
(*b*) Fresh Milk		10	1	5½	1	8	2	1	1	6½
(*c*) Main Carbohydrate Foods	2	7¼	1	10½	1	6		10¼	1	8
(*d*) Fresh Vegetables		10¾		9		9		8½		9¼
(*e*) Other Foods *excl. condiments*	2	4	2	4	2	1¾	1	7	2	1¼
	12	9¾	10	8½	9	6¼	7	8¼	10	0½
Condiments		2½		2½		2½		2		2½
Total Cost of Diet	13	0¼	10	11	9	8¾	7	10¼	10	3

[1] Two children in this age group.

person, since the relatively low cost of the 'human needs' diet outlined by us derives in part from the fact that within the family the rationed foods can be pooled and redistributed according to needs.

The Ministry of Labour index of the cost of food rose from mid-November 1949, to mid-April, 1950, by about 2½ per cent, while the cost of a 'human needs' diet as defined by us, increased by about 4¾ per cent. This latter diet however allows for periodic adjustments in consumption while the Ministry of Labour index remains based on the average quantities of food as consumed by working-class households in 1937-8. It should also be noted that the figures obtained by us refer to a family with young children, and they cannot therefore be applied directly in assessing the cost of a 'human needs' diet of families of a dissimilar composition.

T. SCHULZ.

THE NATIONAL INCOME: FIRST QUARTER OF 1950

(All items in Tables are at £ millions, annual rates. For technical notes on the construction and definitions of the tables, see the end of the paper).

The publication of a new National Income White Paper allowed us to check our previous series of estimates. Since the authors of the White Paper have access to far more information, we take their estimates to be correct, and in the revised estimates for 1948 and 1949 published below, we have fitted our quarterly series to the official annual estimates.[1] We found, however, that we could not accept the official estimates of depreciation, for reasons explained in the technical notes.

We have taken the opportunity to overhaul completely our methods of estimation. Clues to some of our past mistakes were provided by the National Income White Paper. In other cases we have introduced improvements the need for which became obvious as successive sets of estimates were made, and which we have been planning for some time. Using the new methods, which are explained below, we have recalculated every item for each quarter, and in nearly every case reached a somewhat different estimate. Sometimes the change is due to the White Paper's revision of previous estimates (*e.g.* for salaries), or to the provision of new information (*e.g.* for sector composition of the national income) while in other cases the changes are due to the use of different indices or different correction factors.

The net result of these changes is, we hope, some improvement in the estimates. An indication of this is provided by the fact that the residuals are now smoother. 'Profits and interest' in Table III, for example, turned out to provide a series moving continually, and fairly smoothly, upwards.

The national income appears from Table I to be continuing to advance at a rate of nearly £1,000 millions per annum, an increase predominantly due, as before, to the booming of industrial production. The other sectors continue to show slight increases, with the exception of the 'Government' one, covering public administration (but not the nationalised industries), which shows some fall due to the slight decline in the number employed by the central government.

Table II shows that the rise in the aggregate is largely due to the increased quantity of output, and this in turn is occurring almost entirely in the industrial sector. The factor cost of output is only slightly rising, except in agriculture where the rise appears more substantial. The total quantity of national output appears to be rising at a steady rate of about 5 per cent per annum, whether we measure it gross or net of depreciation.[2] For 1948 to 1949 we show a rise of 4.9 per cent, compared to 5.2 per cent obtained as a preliminary estimate by Mr. Reddaway, who worked in 1948 prices and used more refined methods of estimating real changes.[3]

It is rather surprising that industrial output has continued to grow at such

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[1] Except for the foreign trade tables which fit the Balance of Payments White Papers.

[2] Unless of course we adopt the official practice of measuring depreciation at the legal allowance.

[3] Paper read to the Royal Statistical Society (17.5.50).

TABLE I

National Income at current factor cost, seasonally corrected.

	1948				*1949*				*1950*
	I	II	III	IV	I	II	III	IV	I
Agriculture	520	530	570	570	570	580	610	610	610
Industry	5200	5340	5440	5570	5570	5830	5890	6120	6310
Services	2875	2885	2850	2950	3070	3100	3160	3190	3190
Total Business	8595	8755	8860	9090	9210	9510	9660	9920	10110
Government	1040	1025	1060	1105	1125	1135	1125	1125	1120
Other...	415	420	420	425	425	425	425	425	430
Gross National Income	10050	10200	10340	10620	10760	11070	11210	11470	11660
Less Depreciation	920	930	940	950	960	970	980	990	1000
Net National Income	9130	9270	9400	9670	9800	10100	10230	10480	10660

TABLE II

National Income at average 1949 factor cost, seasonally corrected.

	1948				*1949*				*1950*
	I	II	III	IV	I	II	III	IV	I
Agriculture	570	570	590	590	600	580	600	590	600
Industry	5340	5420	5510	5620	5650	5840	5880	6040	6160
Services	3080	3050	3025	2985	3100	3130	3130	3160	3160
Total Business	8990	9040	9125	9195	9350	9550	9610	9790	9920
Government	1100	1080	1105	1135	1140	1140	1120	1110	1105
Other...	415	420	420	425	425	425	425	425	430
Gross National Income	10505	10540	10650	10755	10915	11115	11155	11325	11455
Less Depreciation	920	930	940	950	960	970	980	990	1000
Net National Income	9585	9610	9710	9805	9955	10145	10175	10335	10455

a fast rate, in view of the slower rundown of the numbers in the armed forces. This indicates that the widely expected tapering off in productivity increases has not occurred. The movement in production and employment over this period has been as follows :

(1946=100)		(1) *Seasonally Corrected Industrial Production*	(2) *Industrial Employment*	(3) *' Productivity ' i.e. (1) ÷ (2)*
1948	I	118	110½	106½
	II	119½	111	108
	III	121½	111	109½
	IV	124	112	111
1949	I	124½	112	111½
	II	128½	112	115
	III	129½	112½	115
	IV	133	113½	117½
1950	I	136	113½	119½

The ' productivity ' measure in the last column is of course subject to the usual cautions about ' overall ' comparisons, and its usefulness depends on the accuracy of the production index and on the success of seasonal correction. Even allowing for these qualifications, however, the recent acceleration must reflect a national acceleration in output per man year, for whatever reasons. The qualification about seasonal correction can be overcome if we compare the raw production index numbers for the corresponding period in each year and deflate by the change in the labour force. This gives a ' productivity ' change as follows :—

First quarter 1948 to first quarter, 1949	+ 4.8%
Second quarter 1948 to second quarter 1949 ...	+ 6.1%
Third quarter 1948 to third quarter 1949 ...	+ 5.3%
Fourth quarter 1948 to fourth quarter 1949 ...	+ 6.0%
First quarter 1949 to first quarter 1950	+ 7.5%

Since the corresponding increases for the two previous periods (covering the second half of 1947 to the second half of 1948) were both below 5 per cent, it is evident that some definite quickening in the rate of productivity increases has occurred.[1]

The Economic Survey forecast an annual increase of industrial productivity of 3½ per cent for 1949 to 1950, compared to 5½ per cent for 1948 to 1949. Far from this fall occurring, the preliminary indications are that the increase this year is at least as great as previously. Even if the recent seasonally-corrected rate is only maintained and not increased further, the Survey forecast will be exceeded.

The next step was to look for the causes of the high output early this year. Comparing the production data for each major segment of the industrial sector in December 1949—February 1950 with the corresponding period a year previously, we get the following comparisons :—

All Industry	*Mining*	*Manufacturing*	*Building*	*Utilities*
+ 6½%	+ 5%	+ 7%	+ 5½%	— ½%

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[1] It can be inferred from Cmd. 7933, p. 12, that the reduction in absences from work *of a week or longer* was responsible for a rise in the effective labour force of the order of ½ per cent between 1948 and 1949.

Any productivity comparison for building is of doubtful value, because it refers mainly to non-housing work and the indicators of non-housing work have a very limited coverage[1]. The increase can, however, be fractionally attributed to mining, where overall coal O.M.S. rose from 1.15 to 1.19 in this period. Mining may in fact be partly responsible for the *acceleration* in productivity growth. And the failure of O.M.S. to rise further this spring may check the further growth of productivity in this sector.

To understand the increase in manufacturing productivity we must look at individual industries. These are compared in the same way, but taking 5 months' data, *i.e.* October–February,[2] for 1948–9 and 1949–50, so as to lessen the effect of random influences, and the resulting increases are :[3]

China and Earthenware ...	+ 1%*	Chemicals	+ 1%
Glass	— 4%	Textiles	+ 6%
Bricks, Cement	+ 5%	Clothing	+ 2%
Ferrous Metals	+ 6%	Leather	+ 3%
Non-ferrous Metals	+ 1%	Food	— 2%
Engineering, Shipbuilding ...	+ 6%	Drink, Tobacco ...	— 2%
Vehicles...	+21%	Wood Products ...	+ 4%
Metal Goods	+ 3%*	Paper, Printing ...	+18%
Precision Instruments ...	+19%*	Other manufacturing ...	+ 7%*

* Calculated from October-December data only.

The appearance of this list is very similar to that published for the first 8 months of 1949, *i.e.* the period almost directly before this.[4] The same three industries top the list : Vehicles, Paper and Printing, and Precision Instruments. They also show increases of about the same size, some 20 per cent.

There is then a big gap, as before, until we reach the industries with the next highest performance. These production leaders can still be explained in the same terms : more steel, more paper and more health service lenses respectively. Ferrous metals and ' Engineering and Shipbuilding ' both also showed 6 per cent rises for the year ending May–August 1949, with easier supplies again a large part of the explanation. The fall for clothing to a lower rate of increase (from 6 to 2 per cent) can be attributed to the slacker demand, as can the decline in productivity in drink and tobacco.[5] Two major industries, ' Bricks and Cement ' and Textiles, show an increasing rate of productivity improvement, the increase in the latter (from a figure of 2 per cent per annum) to one of 6 per cent being particularly interesting. Since it carries over 5 per cent of the index weights, and Mining carries nearly 8 per cent, the explanation of the *acceleration* probably lies in these two industries, while the explanation of the continued high *rate* of advance lies partly in the easing of steel and paper restrictions. We must also now be benefiting from the post-war capital investment programme in Industry (including the basic industries)—and even ' P.C. 49 ' may have been of some use after all.

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[1] It is on the whole unlikely that productivity in house-building has risen to this extent. See the Second Report of the (Girdwood) Committee on House-Building Costs.

[2] Five months are preferable to six because of limitations of employment data.

[3] Previously we have been measuring productivity ' per man ' : in the cases below it is per employee '.

[4] ' 1949 : Forecast and Fact,' BULLETIN, Vol. 12, p. 11.

[5] See the analysis of consumption changes below.

TABLE III

National Income by Distributive Shares, seasonally corrected.

	1948				*1949*				*1950*
	I	II	III	IV	I	II	III	IV	I
Wages	3930	4045	4050	4175	4190	4280	4290	4360	4415
Salaries	2070	2120	2170	2200	2225	2245	2260	2270	2280
Forces' Pay	275	245	225	240	250	245	240	235	230
Rent	460	460	465	465	470	470	470	475	475
Profits, Interest, etc.	(2395)	(2400)	(2490)	(2590)	(2665)	(2860)	(2970)	(3140)	(3260)
Net National Income	9130	9270	9400	9670	9800	10100	10230	10480	10660

Table III suggests that, if we ignore inventory gains and remove the effect of the sudden jump in depreciation allowances, the proportion of the national income that takes the form ‘ Profits and Interest ’ (including professional earnings, farmers’ income, and shopkeepers’ profits as well as company profits) has continued to increase, the shares of all the other incomes declining slightly. Indeed, with continued ‘ wage stabilisation ’ and a fast upward increase in national income, this is only to be expected. This effect seems contrary to the impression left by the National Income White Paper, because of the latter’s treatment of inventory gains and depreciation. The reconciliation proceeds as follows :—

	Increase between 1948 and 1949 (£m.)
Profits and Interest shown in Cmd. 7933[1]	—49
Inventory gains[2]	—325
Profits and Interest excluding Inventory gains	+276
Depreciation allowed in Cmd. 7933[3]	+200
Profits and Interest gross of depreciation	+476
Depreciation allowed by ourselves	+40
Profits and Interest shown in Table III	+436[4]

[1] Table 5, Items 4, 5, 6, 7, 8 and 11.

[2] Table 19, Item 47d.

[3] Table 5, line 13.

[4] Actually the increase shown is £440 m., the difference being due to rounding errors in a residual.

Thus between 1948 and 1949 ‘ true ’ profits have not fallen as a superficial reference to the White Paper suggests, but risen by something of the order of one-sixth, absorbing in fact most of the increase in the national income. The implication of the production figures and wage and employment indices is that profits are continuing to rise at much the same rate in 1950. When the impact of falling inventory gains disappears we should therefore see trading profits (*e.g.* in *The Economist’s* survey of company profits) increasing substantially once more.

It should not be assumed of course that personal incomes from profits have risen at this rate. In fact the bulk of the rise in profits has probably been absorbed by company reserves. At the moment the difficulty of allocating inventory gains prevents us from estimating movements of personal incomes and personal savings, as we have tried to do in the past.

Our foreign trade tables, particularly when allowance is made for seasonal factors, show little evidence that devaluation has resulted so far in any marked improvement in the current account balance. The main reason for this is of course the sharp rise in import prices and the resultant worsening of the terms of trade. To a certain extent, however, the impression given in our tables may be misleading. In the first place, it is possible (though there is no positive evidence) that the invisible balance has been more favourable than is indicated here. Further, the correction factor which we apply to exports, since it reflects the lag between shipments and payments, is high

TABLE IV

Foreign Trade at current prices, NOT seasonally corrected.

	1948				1949				1950
	I	II	III	IV	I	II	III	IV	I
Visible Imports	1705	1890	1735	1740	1845	2005	1990	2040	2185
Invisible Imports	540	475	440	365	515	510	570	525	530
Total Payments	2245	2365	2175	2105	2360	2515	2560	2565	2715
Visible Exports	1395	1535	1595	1695	1850	1770	1730	1810	2030
Invisible Exports	520	560	590	580	600	595	675	690	640
Total Receipts	1915	2095	2185	2275	2450	2365	2405	2500	2670
Deficit (—) or Surplus (+) ...	—330	—270	+10	+170	+90	—150	—155	—65	—45

TABLE V

Foreign Trade at current prices, seasonally corrected.

	1948				1949				1950
	I	II	III	IV	I	II	III	IV	I
Visible Imports	1780	1785	1685	1825	1920	1915	1960	2090	2275
Invisible Imports	550	485	400	380	530	530	530	530	555
Total Payments	2330	2270	2085	2205	2450	2445	2490	2620	2830
Visible Exports	1430	1535	1595	1675	1840	1785	1770	1770	2020
Invisible Exports	520	560	585	590	600	600	670	690	645
Total Receipts	1950	2095	2180	2265	2440	2385	2440	2460	2665
Deficit (—) or Surplus (+) ...	—380	—175	+95	+60	—10	—60	—50	—160	—165

when exports are rising, and *vice versa*. Because of this, the increase in the value of exports shipped, which has taken place since September, is only partly reflected in these estimates.[1] The true international trade position, if we ignored altogether delays in payment (*i.e.* abandoned the official cash definitions in White Papers) is certainly one of overall surplus. Even if we had taken the 1949 time-lag correction (2.9 per cent) the table would show, for the first quarter of the year, and before allowing for seasonal factors, a very small surplus on current account. In order to give a more complete picture, a seasonally corrected quarterly index of the volume of exports has been calculated, and is shown below.[2] The figure for the first quarter of 1950 is provisional.

	I	II	III	IV
1948 ...	127	136	139	142
1949 ...	157	148	144	154
1950 ...	(172)			

The revised estimates for consumption presented in Tables VI and VII show continuous series for the main items of consumption from the beginning of 1948. Although our seasonally corrected series are somewhat uneven,[3] the broad outlines of the changes which have been taking place in consumption expenditure emerge clearly. Total consumption expenditure, after a period of relative stability, is still shown to have turned sharply upwards in the second quarter of 1949, and further substantial increases occurred in the fourth quarter of 1949 and the first quarter of 1950. The fixed-price estimates show similar, though less marked, movements. It is also evident that the distribution of total consumption expenditure has changed significantly. Food, clothing, and household goods have absorbed an increasing proportion of total expenditure, whilst the proportion spent on drink and tobacco has declined. These movements are symptomatic of a return to a more balanced pattern of consumption made possible by the greater availability of goods. The magnitude of these changes is indicated by the following table, which shows the percentage distribution of seasonally corrected consumption expenditure at current prices in the first quarter of 1948 compared with the first quarter of 1950[4] :—

	1st quarter 1948	*1st quarter 1950*
Food	27.5	31.0
Drink	9.6	7.9
Tobacco	9.2	8.4
Rent and Rates	7.4	7.1
Fuel and Light	4.0	4.2
Household Goods	6.7	7.3
Clothing	9.8	10.7
Other	25.8	23.5

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[1] This point is discussed at greater length in our previous article, see the BULLETIN for March 1950.

[2] The seasonal correction factors (which are small) are actually of doubtful value, since they are based on a period of only four years, while in two of those years (1947 and 1949) exports in different quarters were strongly affected by non-seasonal influences. The same consideration applies to the seasonal factors calculated for the export value figures.

[3] See the technical notes.

[4] This comparison is not affected by seasonal correction factors, since the same factors are applied in each case.

TABLE VI

Final Consumption at current prices, seasonally corrected.

	1948				1949				1950
	I	II	III	IV	I	II	III	IV	I
Food	2205	2165	2230	2280	2250	2365	2395	2515	2700
Drink	770	780	755	745	700	730	725	725	685
Tobacco	740	810	770	770	725	770	820	745	730
Rent and Rates	595	595	595	605	610	610	615	615	620
Fuel and Light	320	335	345	355	355	340	340	355	365
Household Goods	535	520	510	505	550	570	570	605	640
Clothing	790	810	930	880	925	960	915	990	930
Other...	2070	2070	2035	2000	2050	2055	2055	2045	2050
Total	8025	8085	8170	8140	8165	8400	8435	8595	8720

TABLE VII

Final Consumption at average 1949 prices, seasonally corrected.

	1948				1949				1950
	I	II	III	IV	I	II	III	IV	I
Food	2265	2170	2310	2370	2340	2380	2355	2430	2580
Drink	790	745	720	710	665	740	735	735	695
Tobacco	775	810	770	770	725	770	820	745	730
Rent and Rates	595	600	600	605	610	610	615	615	620
Fuel and Light	330	345	350	355	355	345	340	350	355
Household Goods	540	525	515	505	550	570	575	610	635
Clothing	865	860	960	885	925	960	910	1000	930
Other...	2095	2100	2060	2020	2070	2055	2050	2035	2030
Total	8255	8155	8285	8220	8240	8430	8400	8520	8575

TABLE VIII

National Income and Expenditure for Financial Years.

	1948–9	*1949–50*		*1948–9*	*1949–50*		*1948–9*	*1949–50*
Agriculture	560	600	Wages	4115	4335	Consumption	8140	8540
Industry	5480	6040	Salaries	2180	2265	Govt. current spending	1820	2090
Services	2940	3160	Forces' Pay	240	235	Net Investment ...	(1210)	(1490)
			Rent	465	475			
Total Business	8980	9800	Profits and Interest ...	(2530)	(3050)	Export deficit (—) or surplus (+) ...	—10	—110
Government	1080	1125						
Other	420	425				Net National Product	11160	12010
Gross National Income...	10480	11350				*Less* Net Indirect Taxes	—1630	—1650
Less Depreciation ...	—950	—990						
Net National Income	9530	10360	Net National Income	9530	10360	Net National Income	9530	10360

TABLE IX

National Expenditure at current prices, NOT seasonally corrected.

	1948				*1949*				*1950*
	I	II	III	IV	I	II	III	IV	I
Consumption	7565	8030	8330	8510	7675	8340	8605	8990	8235
Govt. current spending ...	1750	1730	1760	1840	1940	2015	2075	2120	2150
Net Investment	(1550)	(1615)	(840)	(975)	(1515)	(1540)	(1205)	(1370)	(1840)
Export deficit (—) or surplus (+)	—330	—270	+10	+170	+90	—150	—155	—65	—45
Net National Product	10535	11105	10940	11495	11220	11745	11730	12415	12180
Less Net Indirect Taxes... ...	—1435	—1585	—1720	—1715	—1480	—1575	—1740	—1735	—1550
Net National Income	9100	9520	9220	9780	9740	10170	9990	10680	10630

The distribution of expenditure in the first quarter of 1950 is, in most cases, not very different from that which obtained in 1938. The largest divergences from the pre-war pattern are to be found in tobacco, and rent and rates. Tobacco continues to absorb a much higher proportion of expenditure than it did pre-war. Rent and rates, on the other hand, absorb a much smaller proportion of expenditure, but this must indicate the effectiveness of rent controls rather than changes in demand or supply. Since there is no immediate prospect of lower cigarette prices or higher rents, these divergences from pre-war must be expected to continue, and no further great change in the pattern of consumption can now be anticipated.

In the first quarter of this year, our seasonally corrected estimates show a further sharp rise in expenditure on food and household goods, whilst expenditure on clothing[1] and drink has declined.

Table VIII is included because it gives main estimates for the latest full year and also because that full year is the financial year, which has a special significance for policy analysis. One technical point of note in this table is that when we work in financial years the export deficit seems to be opening instead of closing. This is mainly because the first quarter of 1948 showed a large deficit while the first quarter of 1949 showed a surplus ; and, because of the exclusion of ' exports shipped but not paid for ', the first quarter of 1950 showed a deficit. This emphasises that annual totals can be misleading when an item is subject to sharp fluctuations.

Table IX has been improved in one important respect, in that we now make uncorrected estimates of the output of the service industries, so that the fluctuations in the aggregate are more realistic as an indication of the seasonal pattern. The investment residual is therefore also more meaningful as an indication of the seasonal pattern of stock changes. One obvious speculation is whether consumers' finances will bear this year the seasonal increase in spending in the last two quarters, in view of the high rate in the first quarter and recent removals of restrictions on consumer spending. The failure to do so, unless exports expand vigorously, will of course lead to overstocking of distribution outlets, and a reduction in orders on manufacturers' books, *i.e.* some ' patches ' of unemployment. From the first quarter of 1949 to the first quarter of 1950 the increase in consumption expenditure has been £555 m. (at an annual rate), whereas the increase in wages, salaries and forces' pay has been of the order of £250 m. In view of dividend limitation this suggests a substantial fall in personal savings.[2]

Tables X and XI show that the increase in output discussed above has been sufficient to absorb the adverse change in the terms of trade after devaluation and also to permit increases in Government and personal con-

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[1] The seasonally corrected series for clothing is very unsatisfactory, because non-seasonal movements have severely affected the uncorrected series. Thus it would be unwise to lay any great stress on the sharp fall in expenditure on this item between the last quarter of 1949 and the first quarter of 1950.

[2] Increases in proprietors profits, though they may have been substantial, would not be sufficient to make the increase in personal income even nearly equal to the increase in consumer spending.

Table X

National Expenditure at current prices, seasonally corrected.

	1948				1949				1950
	I	II	III	IV	I	II	III	IV	I
Consumption	8025	8085	8170	8140	8165	8400	8435	8595	8720
Govt. current spending	1750	1730	1760	1840	1940	2015	2075	2120	2150
Net Investment	(1240)	(1275)	(1045)	(1260)	(1270)	(1365)	(1460)	(1580)	(1575)
Export deficit (—) or surplus (+)	—380	—175	+95	+60	—10	—60	—50	—160	—165
Net National Product	10635	10915	11070	11300	11365	11720	11920	12135	12280
Less Net Indirect Taxes... ...	—1505	—1645	—1670	—1630	—1565	—1620	—1690	—1655	—1620
Net National Income	9130	9270	9400	9670	9800	10100	10230	10480	10660

Table XI

National Expenditure at average 1949 prices, seasonally corrected.

	1948				1949				1950
	I	II	III	IV	I	II	III	IV	I
Consumption	8255	8155	8285	8220	8240	8430	8400	8520	8575
Govt. current spending	1860	1810	1815	1870	1950	2020	2075	2105	2120
Net Investment	(1555)	(1425)	(1130)	(1215)	(1310)	(1410)	(1530)	(1425)	(1405)
Exports	2055	2170	2220	2285	2455	2390	2440	2435	2560
Less Imports	—2485	—2300	—2120	—2180	—2435	—2460	—2590	—2520	—2600
Net National Product	11240	11260	11330	11410	11520	11790	11855	11965	12060
Less Net Indirect Taxes... ...	—1655	—1650	—1620	—1605	—1565	—1645	—1680	—1630	—1605
Net National Income	9585	9610	9710	9805	9955	10145	10175	10335	10455

sumption. Net investment has nonetheless been maintained, but this implicitly includes the item ' exports shipped but not paid for ' which has recently been rising rapidly. Consequently domestic investment, probably in stocks, seems to have fallen off. The rate of stockbuilding was high in 1949 (£150 m. according to official estimates, if we ignore price increases) and thus it may still be positive in 1950. However, the rush of domestic stockbuilding in most lines is probably over and the continuing rise in output is free to increase other types of expenditure.

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NOTES

(There is not room here to discuss in detail all points of definition and procedure. These notes refer mainly to changes introduced since the preparation of previous papers, to which reference should be made for further information).

TABLES I AND II

AGRICULTURE

It is clear from the National Income White Paper that our previous estimate of the increase in the value of agricultural output between 1948 and 1949 was a good deal too high. Since the price index which we were using was fairly representative, we conclude that statistics of ' movement off farms ' of agricultural products are quite unsatisfactory as an indicator of the volume of current output. Since, however, there is no other satisfactorp indicator, a new method of computing the value of agricultural output has been adopted. The method consists in estimating the value of output in the current crop year, and taking this figure for the value of output (expressed at annual rates) for each quarter.[1] Unfortunately, the most recently published estimate of the value of output in any crop year relates to 1945–46,[2] and the figure quoted there is unsuitable for our purposes, since only the value of *imported* fertilisers, feeding-stuffs, etc., is deducted. However, the estimates of agricultural output (in our sense) given in the White Paper are based on crop-year estimates, and with the help of the wages and profits figures for 1946 and 1947 it is possible to calculate the value of output in those calendar years also. By making an allowance for purchases from home industries, and subtracting this from the Ministry of Agriculture's figures, we can also estimate the comparable figure for the crop-year 1945–46. A simple process of ' unscrambling ' then gives us the figures for 1946–47, 1948–49, and 1949–50. We are abandoning the attempt to attribute the total annual output of the crop year between quarters according to what can only be very inadequate indicators of the output attributable to each quarter. The new method is rather unsophisticated, and contains an element of forecast, but the margin of error is probably smaller.

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[1] It will be seen that in the second quarter of each year there is a slight jump. This results from the fact that the crop-year ends in May, and not at the end of the second quarter.

[2] *Agricultural Statistics, Part II.*

INDUSTRY

We still use the Index of Industrial Production for quantity movements in this series, though new seasonal correction factors were calculated from the figures for April 1947 to March 1950. These factors are somewhat better than the previous ones calculated from 1946–8 data, since they take account of the recent deepening of the summer dip due to the extension of paid holidays, though they are still based on too short a period to measure accurately abnormal influences. Use of a later period as a basis for correction factors also obviates the difficulties due to the fuel crisis in early 1947. The new correction factors (for a ' standard year ' in which Easter falls wholly in April and Whitsun wholly in May) are :—

Jan.	.994	July	1.079
Feb.	.959	Aug.	1.098
March	.960	Sept.	.991
April	1.013	Oct.	.969
May	1.001	Nov.	.948
June	.974	Dec.	1.014

These correction factors indicate that November is still the best month of the year; that January, May[1] and September hardly need seasonal correction; and that July is now almost as subject to holiday influences as August.

Some changes have been made in the price index. The sector analysis published in the National Income White Paper permitted us to compare our price index with that implied in the official index, and it seems that ours has been subject, as previously, to a strong upward bias. We have therefore reconsidered the construction of our index. One type of price relative used was that of hourly earnings, which we realised might bring an upward bias into the price index during a period of rising productivity.[2] Since the industries covered by this type of relative have recently been subject to sharp productivity rises, we have now tried to correct changes in hourly earnings as far as possible for productivity increases (using sub-series of the production index and employment data) so as to approach nearer to unit factor cost. The wholesale price index for non-ferrous metals has also been abandoned, as too erratic and too much subject to import prices, and the small weight concerned has been added to that for ferrous metals. Thirdly, the ' average export value' index for food has been abandoned on the same grounds, and an hourly earnings index substituted.

Another substantial change in the price index has been forced on us by devaluation. We have been using a specially constructed import price relative with a negative weight, in an attempt to remove the effects of import prices.[3] For the post-devaluation quarters the effect of a sudden change in material prices is to cut implied profit margins unless prices of manufactures immediately respond. Since profit margins should be, and are, calculated for any item on the basis of the cost of the raw material when bought, this implication seems unrealistic and we have tried to allow for the time-lag between import arrivals and the sale of finished goods by taking for our import price relative the mean of the relative for the previous three quarters.

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[1] Though May is the most erratic month for performance, even after correction for changes in the date of Whitsun.

[2] BULLETIN, Vol. 11, p. 295.

[3] BULLETIN, *loc. cit.*

For the fixed price estimates we simply apply the Index of Industrial Production to the official estimate for 1949. No attempt is made to reweight movements of individual products by 1949 price-weights, and therefore the phrase ' at average 1949 factor cost ' is not fully accurate. This will not matter unless there is some correlation between recent quantity movements and the change in relative prices between 1946 and 1949. Since industries subject to the high quantity increases recently are those whose prices have relatively declined since 1946 (e.g. metal goods), a negative correlation is indicated. The true series at 1949 prices, if it could be calculated, would therefore probably show a slightly smaller rise than the series we give.

Services

The value of output in the services sector has now been estimated by a different and considerably more elaborate method than the manpower index previously used. In the case of distribution, the Board of Trade index of the value of retail sales has been taken as an indicator. Since retail trade is only a part (although by far the greater part) of the trades which come under the heading of ' distribution ', and since the Board of Trade index is itself based on a sample which consists mainly of large firms, this still leaves an appreciable margin of error. However, the method seems preferable to using the manpower figures as an indicator of changes in volume, for changes in output per man may be an important factor. In order to estimate the value of output at 1949 prices, the Board of Trade index, corrected for seasonal variation, was deflated by the interim index of retail prices.

The value of output in transport and communications was estimated by making separate calculations for railways, road transport, and the remainder of the section. For railways, traffic receipts were taken as an indicator both of the value and the volume of output—that is, constant prices were assumed.[1] For road transport, personal expenditure on travel gives us some indication of the volume and value of output in the passenger sector, while we have also the employment statistics; but the final estimate inevitably contains an element of sheer guesswork. For the rest of the transport and communications industry, this element predominates, since the manpower figures are virtually the only guide that we have. In order to arrive at an aggregate index for transport and communications as a whole, the three categories were assigned weights roughly in proportion to the numbers employed in them, as an approximation to their proportionate share in net added value.

[1] The recent increase in freight charges did not come into force until May 15th. In so as excursion tickets, etc., have become more common since the beginning of 1948, our assumption is not strictly justified, but the error involved is probably small.

For 'professional, financial and miscellaneous services', the indicator which has been used is personal expenditure on entertainments, domestic service, and 'other services'. The White Paper gives value and volume index numbers, which were weighted by the value of expenditure on each of the three items in 1949. From the resulting (annual) value and volume index-numbers, it was possible to calculate a rough quarterly price index, which was used for deflating the quarterly estimates of the value of output. The latter were estimated from the estimates of quarterly consumption expenditure on 'other goods and services', given in the *Monthly Digest*, the estimated expenditure on 'other goods' (as opposed to services) being first deducted from this composite figure. This series was also used to arrive at seasonal correction factors.

The three individual series—for distribution, transport, and other services—were then combined into one aggregate index for the whole services sector, weights being assigned in accordance with estimated value of output in each of the three series. The resulting index was used in order to distribute the 1948 and 1949 figures (as given in the White Paper) over the different quarters. The results obtained show a rise in the value of output of 4 per cent between 1948 and 1949, and a rise in volume of 1½ per cent. By contrast, the value increase as shown in the White Paper is 8 per cent. This, however, is not profoundly disturbing, since the White Paper figures are not above suspicion—it is hard to believe that profits in the services sector really increased by over 20 per cent in the period; and there is no doubt that the method is preferable to that which has been used previously. However, the quarterly values were eventually redistributed to give the White Paper annual averages, because of our principle of taking the White Paper estimates as data. For the purpose of calculating the value of output in 1949 prices, an increase in volume of 3 per cent between 1948 and 1949, has been postulated. It is thus assumed that our volume index has understated the increase in real output to the same extent as (according to Cmd. 7933) our value index understated the increase in value. This indirect method has to be used since there is no alternative price index which could be used to deflate the official estimates. For the treatment of the transfer of services from this sector to the Government sector on the introduction of the health service, see the next note.

GOVERNMENT

Our previous estimate of the increase in this sector from 1948 to 1949 at first sight differed markedly from that of the National Income White Paper. However, the latter turns out to be largely due to the transfer of hospital employees from the services sector when the health service was introduced. In these estimates we have tried to allow for the effect of this change on wages and salaries in both sectors. In addition we get some indications about the progress of rates of pay, indications which we use, with employment data, to distribute the annual totals over the quarters. The other items in this sector are forces' pay, on which see the notes on the next table, and depreciation, quarterly estimates for which were obtained by interpolation and extrapolation. Fixed price estimates for each item except depreciation were assumed to be a function of employment, as before.

OTHER

This consists of gross dwelling rents and net income from abroad. For the former our previous estimates appear to have been rather too high, and we now use the official estimates which are distributed smoothly over the quarters, as are the estimates for net income from abroad.

GROSS NATIONAL INCOME

This differs from the National Income White Paper aggregate ' gross national product at factor cost ' by including net income from abroad.

DEPRECIATION

The White Paper estimate jumps £200 millions between the two years almost entirely because of the changes in the legal rate of allowances introduced in the 1949 Budget. There are two ways of dealing with this jump which would still leave the annual averages of the White Paper unchanged. The first would be to keep as far as possible to the legal definition of depreciation, accepting a jump of nearly £200 millions between the first and second quarters of 1949, with corresponding falls in net national income, net investment and profits, bringing in fact a sharp discontinuity into most of the tables. The second would be to distribute the jump over all the quarters, damping its effect, but giving the net national income and the residual components a heavy downward bias and departing from any basis of definition of depreciation, even the legal basis.

Since both these solutions were unsatisfactory, we reluctantly decided to abandon the White Paper at this point. What we did was to assume the 1949 estimate for depreciation happened to approximate to replacement cost of wear and tear. In view of the increased cost of capital goods, it seems to be a reasonable multiple of the 1938 estimate, which was possibly not too inaccurate. The important point in any case is not so much the *level* of depreciation as its *rate of increase*. The increase in the value of fixed capital is of the order of 4 per cent per annum and it was assumed that wear and tear was increasing in the same proportion, giving us an estimated annual increase in depreciation of £40 millions, or £10 millions per quarter (at annual rates)—only one-fifth of the increase shown in the White Paper for depreciation as legally defined.

NET NATIONAL INCOME

This differs from the National Income White Paper aggregate in being defined as ' net ' of depreciation at replacement cost instead of at legal allowance, and in excluding inventory gains.

TABLE III

WAGES

The estimates given for the quarters of 1948 and 1949 are based on the quarterly analysis of the National Wage Bill given in Table 6 of Cmd. 7933. The estimate for the first quarter of 1950 is obtained by using the method which we have described elsewhere,[1] and which has yielded satisfactory results in the past.

SALARIES

When neither the number of salaried workers, nor salary rates, are known estimates of the salary bill are necessarily hazardous. An estimate for a period later than that covered by the most recent National Income White Paper must rely on extrapolation. Rather than extrapolating directly on the basis of the Salary bill itself, we have thought it prefereable to assume that the number of salaried workers varies in proportion to the movements in civil employment as a whole, and to extrapolate the salary rates index implied by previous estimates of the Salary Bill. The considerable upward revision in all our estimates of salaries is due to a corresponding revision in this year's National Income White Paper.

FORCES' PAY

The publication of Cmd. 7933 showed that our earlier estimates for Forces' Pay[2] in 1949 were much too low. There seem to be two reasons for this inaccuracy : first that we under-estimated the effect of the increases in pay and allowances which took place in the last quarter of 1948, and second that by basing our estimate solely on employment on H.M. Forces we did not take account of the increased cost of providing food, clothing, and other income in kind. In the present series of estimates we attempt to allow for these factors.

PROFITS AND INTEREST

Since we do not include inventory gains in National Income, and since we base depreciation allowances throughout this period on the change in replacement cost, our Profits and Interest series differs in definition and in trend from that shown in *Cmd.* 7933. It must, however, be borne in mind that the figures we quote are residuals, whose accuracy depends entirely on the accuracy of the other series in the table. The smooth movement of the residual may be due to the changes made in our calculation of Net National Income.

TABLES IV AND V

The categories we use in these estimates are the same as those of the White Papers on the Balance of Payments. In particular, we are attempting to show the balance of payments on a cash rather than an accrual basis. Our estimates were closely confirmed by official data and there seems no reason to

[1] BULLETIN, Oct. 1949.

[2] BULLETIN, March 1950.

change the basic methods. The estimates for 1948 and 1949 have been revised in the light of the information given in the latest White Paper (Cmd. 7928). For the first quarter of 1950, correction factors of 14 per cent (for imports) and 5 per cent (in the case of exports) have been applied to the Board of Trade figures. In the invisible account, a slight fall has been assumed in the rather mysterious item 'Other (net)' on the receipts side, which was remarkably high last year.[1] Apart from this, no important changes have been made from the 1949 figures.

TABLES VI AND VII

The consumption estimates have been revised throughout. Seasonal factors have been recalculated from data covering the period 1947–49 inclusive, and the fixed-price estimates are now shown on the basis of average 1949 prices.

The seasonal correction factors are not completely satisfactory since they are affected by non-seasonal movements in the series on which our correction factors are based. Thus, for example, an upward movement in the value of a series for a particular quarter may be due to an increase in available supply unconnected with specifically seasonal movements. But since it has been found impracticable to distinguish between movements caused by seasonal influences, and those caused by non-seasonal influences, random movements will affect our seasonal correction factors. Thus our seasonally corrected series, though they are, of course, very much smoother than series of actual expenditure, remain somewhat uneven. For food we found that seasonal correction of *value* estimates was more satisfactory than seasonal correction of *quantity* estimates, though the latter basis of seasonal correction is retained for other series.

The adjustment to average 1949 prices was attended with some difficulty, due chiefly to the divergence (particularly in the case of food and clothing) between the price increases shown by the retail price index and those implied by the fixed price estimates in Cmd. 7933. Our method here has been to superimpose the fluctuations of the retail price index onto the trend yielded by the fixed price estimates. We feel that this procedure will give a more accurate indication of overall quantity movements than would be obtained by direct use of the retail price index.

TABLE VIII

The items in this table are in effect calculated by adding to the official estimates for the calendar year the difference between the estimate for the first quarter of that calendar year and the first quarter of the following calendar year. These estimates are thus only slightly less reliable than those of the White Paper. For definitions see the notes on the corresponding items of other tables.

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[1] This item is now so important that there would seem to be a strong case for showing at least some of its components separately. In this respect, as in others, the White Paper on the balance of payments is at present an unsatisfactory document. In view of the critical importance of the information which it supplies, the absence of any official commentary on the estimates—apart from a few laconic statistical notes—is regrettable, particularly where the capital account is concerned. Even in the presentation of the figures, the latest White Paper is at fault. In its predecessor, separate estimates (which were not described as provisional) were published for the first and second half of 1948. The estimates for the year 1948 have now been revised, but the new figures relate only to the year as a whole : there is no attempt to split up the annual data. Where changes of this kind are made, the new figures should be published in the same detail as the old.

TABLES IX, X AND XI

GOVERNMENT CURRENT SPENDING

This item remains the Achilles heel of our estimates. Several methods of estimation have been attempted, but none is satisfactory. Current estimates must be based in some way upon actual supply issues, but this basic datum fluctuates from quarter to quarter in a manner which defies correction. Indeed this fluctuation must be at least partly caused by movements in departmental balances about which nothing is known.

The method we finally adopted for the 1950 estimate may be briefly described, since it serves to point the difficulties a member of the public encounters in working through the labyrinth of his Government's finances. To begin with, a trend value for supply issues in a given quarter is obtained by extrapolating the trend indicated by a four-quarter moving average of supply issues. The next step involves working through the formidable table 32 in Cmd. 7933, to arrive at an estimate of the total current expenditure of the Central Government. From this total we now deduct the other items of current expenditure (table 25), giving an estimate of the current expenditure by the Central Government on goods and services. We now add estimates of current expenditure on goods and services by Local Authorities and National Insurance Funds, yielding, finally, an estimate of public authority expenditure on current goods and services. Where necessary, we base our estimates on the official ones for 1949, attempting to estimate quarterly changes.

This method is, of course, open to objection. Firstly, there is a substantial subjective element in the estimation of the trend value of supply issues. Secondly, although some of the adjustments which have to be made can be estimated with a fair degree of accuracy (*e.g.* subsidies) others are little more than guesses (*e.g.* capital items in civil supply expenditure). An adequate solution to our problem must await the day when Government accounts are presented in such a way as to conform more closely to modern requirements.

NET INVESTMENT

This residual implicitly excludes inventory gains and is net of depreciation, valued as explained above.

NET INDIRECT TAXES

These were estimated in the same basic way as before, those attributable to consumers' spending being treated as a function of consumption rather than as a function of the tax payments in the quarter concerned.[1] It was possible to make slight improvements in the method of estimation. The ' general ' indirect taxes, such as employers' contributions to social insurance, had been distributed by the official estimates in proportion to expenditure in each category. Since the amount attributed to consumption is given in the National Income White Paper, and the scope of ' consumption ' subject to such taxes is approximately defined, it can be inferred that the proportions used for allocation by the estimators were .0277 in 1948 and .0279 in 1949. Applying these proportions to total exports (including ' invisibles ') we reach the same figures for indirect taxes attributable to exports as are given in the White Paper, which provides a check.[1] Some of the indirect taxes attributable to Government spending are specific (Government contributions as an employer to social insurance). The remainder is slightly larger a proportion of Government spending that the overall averages cited above, indicating that there is some specific element not superficially obvious. For investment the official estimates fluctuate around the level indicated by the above proportions of general indirect taxes, suggesting that in 1948 specific subsidies outweighed specific taxes and in 1949 the converse was true. These experiments told us at once that indirect taxes on exports could be treated in all estimates as a direct function of exports, that indirect taxes on Government spending could be treated partly as a function of Government employment and partly as a function of Government spending, while indirect taxes on investment would have to be interpolated. The only other change was that for 1948 allowance was made in all estimates for the sharp rise in employers' contributions to social insurance.

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[1] BULLETIN, Vol. 11, p. 380.

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[1] It also tells us that the implications of the official estimates are that indirect taxes such as employers' social insurance contributions and duties on commercial vehicles add less than 3 per cent to the cost of our exports.